



## The short-term influence of temperature on daily mortality in the temperate climate of Montreal, Canada

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### Abstract:

The purpose of this study was to determine whether short-term changes in ambient temperature were associated with daily mortality among persons who lived in Montreal, Canada, and who died in the urban area between 1984 and 2007. We made use of newly developed distributed lag non-linear Poisson models, constrained to a 30 day lag period, and we adjusted for temporal trends and nitrogen dioxide and ozone. We found a strong non-linear association with high daily maximum temperatures showing an apparent threshold at about 27 °C; this association persisted until about lag 5 days. For example, we found across all lag periods that daily non-accidental mortality increased by 28.4% (95% confidence interval: 13.8-44.9%) when temperatures increased from 22.5 to 31.8 °C (75-99th percentiles). This association was essentially invariant to different smoothers for time. Cold temperatures were not found to be associated with daily mortality over 30 days, although there was some evidence of a modest increased risk from 2 to 5 days. The adverse association with colder temperatures was sensitive to the smoother for time. For cardio-respiratory mortality we found increased risks for higher temperatures of a similar magnitude to that of non-accidental mortality but no effects at cold temperatures. © 2011 Elsevier Inc.

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### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

**Air Pollution:** Ozone, Other Air Pollution

**Air Pollution (other):** NO2

**Temperature:** Fluctuations

#### Geographic Feature:

resource focuses on specific type of geography

Urban

#### Geographic Location:

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resource focuses on specific location

Non-United States

**Non-United States:** Non-U.S. North America

**Health Impact:** ☒

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Morbidity/Mortality, Respiratory Effect

**Cardiovascular Effect:** Other Cardiovascular Effect

**Cardiovascular Disease (other):** cardiovascular disease mortality;cardiorespiratory mortality

**Respiratory Effect:** Other Respiratory Effect

**Respiratory Condition (other) :** respiratory disease mortality;cardiorespiratory mortality

**Population of Concern:** A focus of content

**Population of Concern:** ☒

populations at particular risk or vulnerability to climate change impacts

Elderly

**Resource Type:** ☒

format or standard characteristic of resource

Research Article

**Timescale:** ☒

time period studied

Time Scale Unspecified